

# American Museum Novitates

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PUBLISHED BY THE AMERICAN MUSEUM OF NATURAL HISTORY  
CENTRAL PARK WEST AT 79TH STREET, NEW YORK 24, N.Y.

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NUMBER 1922

DECEMBER 31, 1958

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## Studies in the Orbweaving Spiders (Argiopidae). 4

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### INTRODUCTION

The present paper gives additional and significant material in the subfamilies Nephilinae, Metinae, Theridiosomatinae, and Araneinae, and is the fourth of the series of the above title [see Amer. Mus. Novitates, no. 1487 (1951), no. 1502 (1951), and no. 1622 (1953)]. All material on which it is based comes from the tropical or subtropical regions of the world. Moreover, with a few exceptions most of the species come from the Antillean subregion of Neotropical America. Subsequent papers will deal specifically with the Antillean members of the genus *Eustala* as well as the gasteracanthid Araneinae of the Neotropical region.

The author acknowledges his indebtedness to the staff of the Department of Insects and Spiders of the American Museum of Natural History, the staff of the Poey Museum of the University of Havana, Cuba, of the University of Oriente, Santiago, Cuba, and of the Science Museum of the Institute of Jamaica, Kingston, Jamaica. Especial thanks are due to Dr. Willis J. Gertsch of the American Museum of Natural History for counsel, encouragement, and material aids furnished in the interests of the Antillean trip made in 1955. The afore-mentioned trip resulted from leave granted by Union University, Jackson, Tennessee, and facilitated by its president, Dr. Warren F. Jones. Particular thanks

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are also due to the following persons: Dr. C. G. Aguayo, Poey Museum; Dr. Miguel L. Jaume, Havana, Cuba, who made a fine collection available for study; Dr. J. T. Acosta, also of Havana; Dr. Salvador L. de la Torre, University of Oriente, Santiago, Cuba; Dr. Ernesto Pujals, Secretary of the University of Oriente; Mr. Pastor Alayo, Ramsden Museum, University of Oriente; Mr. C. B. Lewis, Director of the Science Museum, Kingston, Jamaica; Mr. Tom Farr and Mr. Ronald Bengry, both of the Science Museum. Each of the individuals named made available to the author museum facilities, furnished equipment for field work, and, moreover, a majority of those named accompanied the author on field trips. For many miscellaneous helps and kindnesses rendered in the countries of the Greater Antilles the author expresses thanks to numerous individuals not listed here by name.

The types of the new species herein described are deposited in the collections of the American Museum of Natural History.

## SYSTEMATIC SECTION

### SUBFAMILY NEPHILINAE

#### *Nephila (Trichonephila) clavipes clavipes* (Linnaeus)

*Epeira clavipes* WALCKENAER, 1841, Histoire naturelle des insectes, aptères, vol. 2, p. 95.

*Aranea clavipes* LINNAEUS, 1767, Systema naturae, ed. 12, p. 1034, no. 27.

*Nephila clavipes* PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 381.

F. O. P.-Cambridge (1902, Biologia Centrali-Americana, Araneida, vol. 2, p. 449) first called attention to the difference between those members of *Nephila clavipes* having pronounced femoral brushes and those in which the femoral brushes are short, thin, and sparse. An examination of available material establishes the fact that in Cuba and Hispaniola there is a geographical race in which the tufts are weak, whereas over the rest of the American area, including the balance of the Antilles, notably Jamaica, the strongly tufted race prevails. No specific difference is revealed in the genitalia, although minor differences in the palpi of certain individual males can be detected. In the case of the "brushless" race a close examination shows that the tufts are present but that they have a shaved or cropped appearance, and finally that the hairs tend to be sparser.

The decision to assign the weak-tufted race to typical *Nephila clavipes* is drawn from Linnaeus' original description. It is probable that this author had before him individuals lacking brushes on legs I and II, as is pointed out by McCook (1893, American spiders and their spinning work, vol. 3). At present this race is positively known only

from Cuba, the Isle of Pines, and Hispaniola, while the tufted race first described under the name *fasciculata* De Geer occurs in the balance of the Caribbean area and on the American mainland.

One matter of a challenging nature pertaining to this race is the fact that there are at least three size classes of males ranging from less than 3.5 mm. up to over 7 mm. in length.

*Nephila (Trichonephila) clavipes fasciculata* (De Geer)

Figures 1, 2

*Aranea fasciculata* DE GEER, 1778, Mémoires pour servir à l'histoire des insectes, vol. 7, p. 316, pl. 39, figs. 1-4.

*Epeira plumipes* WALCKENAER, 1837, Histoire naturelle des insectes, aptères, vol. 2, p. 99.

*Nephila plumipes* C. L. KOCH, 1839, Die Arachniden, vol. 6, p. 138, pl. 213, fig. 529.

*Nephila wilderi* MCCOOK, 1893, American spiders and their spinning work, vol. 3, p. 251, pl. 7, figs. 1, 2, pl. 23, figs. 6, 6a, 7, 7a.

This geographical race is, of course, characterized by the presence of tufts on the femora, at least on the first, second, and fourth and rarely missing from the third pair. The sternal cone is more or less pronounced in females over a good deal of the range of *N. c. fasciculata*, as far as material available for examination is concerned. In the case of typical *N. clavipes* the sternal cone is reduced. The tufted race occurs in Jamaica, other parts of the Caribbean region, North America, Middle America, and South America. The contrast in size classes of males also appears as a phenomenon in *fasciculata*. The known range in total length of males is 3.2 mm. up to 8.0 mm.

NOTHONEPHILA, NEW SUBGENUS

Differing from *Trichonephila* in the possession of a pair of cephalic horns in the female and in the projection of the very differentiated ocular node. Radix of the embolic division of the male palpus long, as in *Cyphonephila* of the Old World. Carapace of the female having a dense pile.

*Nephila (Nothonephila) cornuta* (Pallas)

Figures 3-6

*Aranea cornuta* PALLAS, 1772, Spicilegia Zoologica, vol. 9, p. 44, pl. 3, fig. 15.

*Nephila clavipes* F. O. P.-CAMBRIDGE, 1902, Biologia Centrali-Americana, Araneida, vol. 2, pp. 448-449.

*Nephila clavipes* PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 381.

Cambridge's statement regarding *N. cornuta* is misleading and no doubt influenced Dahl (1912, Mitt. Zool. Mus. Berlin, vol. 6, pp. 1-91) in his monograph on *Nephila* to assign to it the status of a subspecies of *N. clavipes*. Cambridge stated that he had in front of him specimens in which the cephalic horns varied from being nearly obsolete to being stout conical protuberances. The possession of horns that are nearly obsolete should be interpreted as an indication of immaturity. The important clue to the status of *N. cornuta* lies in the reproductive organs which are distinct in both sexes. Unfortunately this species is not common in collections in the large museums, and adequate series can be found only in the British Museum and possibly in South American institutions. In fact, it is only from the latter that a male has ever been figured.

The females exhibit the peculiarity of having the paired cephalic horns, the presence or absence of which is one of the features used by Dahl in his monograph in characterizing subgenera of *Nephila*. In addition, the projection of the lateral ocular protuberances is another striking subgeneric feature. In the specimens examined the femoral tufts are very well developed.

#### SUBFAMILY METINAE

#### *Nicholasia tigrina* (Simon)

##### Figure 9

*Dolichognatha tigrina* SIMON, 1893, Ann. Soc. Ent. France, vol. 62, p. 330.

*Dolichognatha tuberculata* PETRUNKEVITCH, 1911, Bull. Amer. Mus. Nat. Hist., vol. 29, p. 336 (in part).

*Nicholasia tigrina* BRYANT AND ARCHER, 1940, Psyche, vol. 47, nos. 2-3, pp. 60-65, 1 fig.

This species is recorded as occurring in northern South America and the Antilles where it appears to replace *Nicholasia pentagona* (Hentz) of North and Middle America. The generic position of *N. tigrina* (Simon) as well as of the other American species was pointed out in the paper of E. B. Bryant and the author. This is the first record for Cuba, where this species seems to be uncommon. The locality is Soroa, Pinar del Río, Cuba, June 21, 1955 (A. F. Archer).

*Nicholasia tigrina* was found in association with the characteristic horizontal web. At the time, it appeared to be larger than the web of *N. pentagona*, in spite of the fact that the two species in question are of similar stature. All the webs were found on the exposed roots at the bases of palm trees in the dense, evergreen rain forest. The individual spiders were found on the suspended ropes of egg sacs located beyond the limits of the orb web and behind it next to the tree base.

The body form and coloration of *N. tigrina* are similar to those of *N. pentagona*, but the conical protuberances of the abdomen are subacute instead of being blunt. The epigynum (fig. 9) differs from that of the other species illustrated in the paper by Bryant and Archer.

***Metargyra fuscolumbata*, new species**

Figure 10

**FEMALE:** Carapace with a yellow ground color; a light brown patch on the cephalon between the anterior median and posterior median eyes; another similar but larger patch between the eyes and the cervical declivity; a fine longitudinal line running forward from the declivity to the space between the posterior median eyes; cephalon bordered on each side by a dark line curving inward towards the center behind the posterior median eyes, only to expand laterally again bordering the dorsal region of the thorax, finally converging posteriorly at the beginning of the cervical declivity; two extraneous lines present outside the main border lines above described. Sternum light yellow, brown bordered. Legs yellow, broadly brown-annulated; annulations not present on proximal halves of femora. Abdomen brownish; dorsum having a distinct and regular folium, blackish purple; sides heavily reticulated with purple markings. Venter light brown, with a gray patch in center anterior to the spinnerets; area anterior to epigynum chalky, the latter being black. Leg formula, 1243; spines on femora prolateral, retrolateral, and dorsal, all being located proximally; tibia with one prolateral distal and one dorsal spine. Shape of carapace as usual in *Metargyra*. Abdomen oval, portly, its sides and dorsum covered with short hairs on points. Epigynum as illustrated in figure 10.

Total length of female holotype, 5.8 mm.; carapace, 3.0 mm. long, 2.0 mm. wide; abdomen, 3.9 mm. long, 3.8 mm. wide; first femur, 3.0 mm.; patella, 1.0 mm.; tibia, 3.3 mm.; metatarsus, 3.3 mm.; tibia, 1.0 mm.

**TYPE LOCALITY:** Female holotype from Hardwar Gap, elevation 4800 feet, Portland Parish, Jamaica, July 28, 1955 (A. F. Archer).

This species was found in the transition zone between the tree fern and pine forest, in the top of the cull hole of a tree above the vertical orb web. The nest and situation occupied by this spider are quite similar to those frequented by members of the genus *Azilia*.

***Mecynometa torrei*, new species**

Figures 7, 11

**MALE:** Carapace and legs uniformly light coral red. Abdomen also light coral red, but with a black wash on the posterior region and with

small chalky fat bodies showing through the cuticle of the dorsum and sides; venter exhibiting in front of spinnerets large, conspicuous, fat bodies. Shape of carapace widely cordate; cephalon elevated into a low dome, with little indication of the cervical grooves present; ocular region occupying a large portion of the cephalon; anterior median eyes on slightly elevated, narrowly separated elevations, and slightly smaller than posterior median eyes; posterior median eyes separated by one diameter; lateral eye separated from posterior median eye by more than the diameter of the latter, closely adnate. Palpus relatively large, illustrated in figure 11. Leg formula, 1243, a bit slender, but not proportionately long, a characteristic closely simulating that of the previously known females of *Mecynometa*; legs having a few dorsal and prolateral slender spines; fourth tibia having a few dorsal and prolateral slender spines, and a very long prolateral spine arising from a proximal point close to the border of the patella; fourth femur having a retrolateral ventral row of five long trichobothria, and above this an almost dorsal row of four long trichobothria.

Total length of male holotype, 1.0 mm.; carapace, 0.5 mm. long, 0.4 mm. wide; abdomen, 0.4 mm. long.

TYPE LOCALITY: Male holotype from Sierra las Casas, Isle of Pines, Cuba, August 16-18, 1956 (A. F. Archer).

This species was taken in the beating net from sclerophyllous vegetation of the *sao* forest of the sierra. I am happy to dedicate it to Dr. Salvador L. de la Torre y Callejas of the University of Oriente, who has collected Arthropoda from all the regions of Cuba.

#### *Mecynometa montivaga*, new species

##### Figure 8

MALE: Carapace coral red. Abdomen missing. Palp having a deep orange bulb. Legs deep green, at least on the outer and dorsal faces. General facies of this species almost identical with that of the previously described one, but of a larger stature. Leg formula, 1243; fourth femur having the usual dorsal and retrolateral rows of trichobothria.

Total length of the carapace of the male holotype, 1.8 mm. Abdomen missing.

TYPE LOCALITY: Male holotype from Hardwar Gap, above 4300 feet, Portland Parish, Jamaica, July 29, 1955 (A. F. Archer).

#### *Allepeira martiana*, new species

##### Figures 12, 13, 26

FEMALE: Carapace light yellow, with a central, longitudinal black

line and a wide dark lateral border. Legs light green, dark at the joints, and with a dorsal, longitudinal line on the femora. Sternum dark, with a wide, median patch of yellow. Dorsum of abdomen having a wide irregular folium, bordered with white; folium itself of variegated colors anteriorly, white, red, yellow, and black; posteriorly becoming red and light brown, but terminating in black caudally; sides of abdomen having irregular longitudinal stripes, themselves green and black, each separated by white. Venter bordered by yellow, itself consisting of a wide black stripe located between the epigastric groove and the spinnerets and enclosing on each of the four sides a dark yellow zone. Carapace, eyes, abdomen, and legs similar to those described for *A. lemniscata* (Walckenaer). However, abdomen apparently deeper dorsoventrally. Epigynum as illustrated in figure 26.

Total length of female allotype, 8.4 mm.; carapace, 3.4 mm. long, 2.0 mm. wide; femur of first leg, 4.6 mm.; patella, 1.1 mm.; tibia, 4.0 mm.; metatarsus, 3.3 mm.; tarsus, 1.5 mm.

**MALE:** Carapace of a coloration much like that of the female and also strongly similar to that of *A. lemniscata* (Walckenaer)—yellow, with a longitudinal dark line and with black borders. Abdomen of the same general coloration as that of the female. Legs green, grading into reddish brown, and with a narrow dorsal stripe on each femur. Body of the male more slender than that of the female, the discrepancy in build being particularly marked in the abdomen. In proportion to the length of the carapace, the legs longer than those of the female. Leg formula, 1243; first femur having three dorsal and four prolateral spines, five pairs of ventral spines, and four retrolateral spines; tibia, three dorsal, three prolateral, four retrolateral spines, three pairs of ventral spines; metatarsus, three dorsal, four prolateral, three retrolateral spines, three pairs of ventral spines. Male palp as illustrated in figures 12 and 13.

Total length of male holotype, 5.7 mm.; carapace, 2.5 mm. long, 2.0 mm. wide; abdomen, 3.7 mm. long, 2.0 mm. wide.

*Allepeira martiana* makes a web similar to that of *A. lemniscata*, but the dome is less elevated and is also smaller in dimensions. However, the stature of this species is generally fully equal to that of the species found in North America. In fact, a large male is recorded from Cuba (total length, 8.1 mm.). The web of *Martiana* is found in the tops of large ground plants such as agave. Harriet Exline (1948, Ann. Ent. Soc. America, vol. 41, pp. 309–325) analyzed *Allepeira lemniscata* in great detail, and included notes on measurements, morphology, and localities of the Antillean *Allepeira*, but without realizing that she had in front of her a distinct species. Field experience in reference to

this widely dispersed and rather uncommon species lends additional weight to the differences shown in the genitalia. As is shown above, there are visible differences between the webs of the two species.

**TYPE LOCALITY:** Male holotype from Carretera Monserrate, Matanzas Province, Cuba, June 7, 1947 (P. Alayo).

**OTHER LOCALITIES:** *Haiti*: Port-au-Prince, July 18–21, 1955 (A. F. Archer), female allotype and female paratypes, in the American Museum of Natural History and Archer collections. *Cuba*: Carretera Monserrate, Matanzas Province, June 7, 1947 (P. Alayo), male paratypes, in the University of Oriente collection and Archer collection.

**RANGE:** Cuba and Hispaniola.

This species is dedicated to José Martí, outstanding patriot of the period of Cuban liberation.

#### SUBFAMILY THERIDIOSOMATINAE

##### *Ogulnius cubanus*, new species

##### Figure 17

**FEMALE:** Carapace yellow; behind each posterior median eye a comma-shaped, recurved, brown patch; the other eyes bordered by dusky. Sternum yellow, with a dusky border. Legs yellow. Dorsum of abdomen with a ground color of chalky white; a narrow zone of dirty white around each of the first pair of muscle scars, a wider zone of dirty white around the second pair of muscle scars. Carapace, legs, and abdomen of *Ogulnius cubanus* entirely typical of the genus *Ogulnius* in form and proportions. Epigynum as illustrated in figure 17.

Total length of female holotype, 1.2 mm.; carapace, 0.5 mm. long, 0.3 mm. wide; abdomen, 0.9 mm. long, 1.1 mm. wide.

**TYPE LOCALITY:** Female holotype from Chirivico, Oriente Province, Cuba, July 2–4, 1955 (A. F. Archer). Female paratypes, from the same locality, in the American Museum of Natural History and Archer collections.

This species is closely related to *Ogulnius fulvus* Bryant and *O. palisteri* Archer, differing from both in the details of the epigynum. The genus *Ogulnius* is little known in the literature as to habitats and ecological preferences. This new species is exceptional in the author's experience, for, while most species, such as *O. fulvus*, are found at higher elevations in the mountains, it on the other hand was swept from the costal *monte* (jungle) evergreen shrubs and trees found on sloping, rocky terrain. Apparently in all situations *Ogulnius* is found on a drier terrain than that favored by the related genus, *Theridiosoma*.



## SUBFAMILY ARANEINAE

*Cyrtophora alayoi*, new species

Figures 14-16

**MALE:** Carapace very dusky. Sternum dusky. Abdomen dusky. Legs deep ruddy brown, extending as far as the bases of the tibiae; bases of tibiae with a light red annulation, and from there distally a pale yellow ground color with the exception of a faint black ring at the base of the tarsus. Carapace widely cordate. Eyes of the two rows about evenly spaced, more than a diameter apart; anterior median eyes on raised bases; lateral eyes spaced one diameter apart. Leg formula, 1243; legs of medium length and moderately stout; first femur having a ventral row of short, stout hairs; leg spines short, few, and scattered. Abdomen irregularly ovate in shape and having humeral cones, prominent and stout on each shoulder. Palp as illustrated in figure 16.

Total length of male holotype, 2.5 mm.; abdomen, 1.0 mm. long, 0.8 mm. wide.

**FEMALE:** Carapace bright yellow. Sternum dusky. Legs orange and with a faint, wide annulation on each segment except the patella. Abdomen chamois colored, having a folium widely expanded at the shoulders, narrowing behind and with a wavy outline, bordered by a white line on each side, each white line in turn being outlined with red anteriorly. Venter chamois colored except for a wide, transverse, dusky patch lying between the epigastric groove and the spinnerets. Carapace widely cordate, being expanded noticeably in the thoracic region; cephalon moderately long and with anterior median eyes on a prominence; anterior lateral eyes under an overhanging projecting tubercle; posterior lateral eyes located well back from anterior lateral eyes, relatively large; posterior median eyes separated by a diameter; anterior median eyes larger than posterior median eyes, and also separated fully by a diameter. Abdomen subtriangular; shoulder prominences stout. Legs stout, especially the femora which tend to be expanded; short spines on large points located on femora, patellae, tibiae, and metatarsi, being found on each segment on the prolateral, dorsal, and retrolateral faces, in three's on the femora, and in two's on the succeeding segments; spines of the metatarsus exceptionally long, no ventral femoral spines; tibiae and metatarsi with two rows of ventral spines, three to four in each.

Total length of female allotype, 10.4 mm.; carapace, 5.0 mm. long, 3.6 mm. wide; abdomen, 7.7 mm. long, 6.7 mm. wide; first leg: femur, 5.0 mm.; patella, 1.1 mm.; tibia, 3.4 mm.; metatarsus, 2.1 mm.; tarsus,

1.7 mm.; second leg: femur, 4.9 mm.; patella, 1.0 mm.; tibia, 3.1 mm.; metatarsus, 2.0 mm.; tarsus, 1.6 mm.

TYPE LOCALITY: Male holotype from Banes, Oriente Province, Cuba, August 1-3, 1955 (A. F. Archer). Subadult female paratypes, from the same locality, in the American Museum of Natural History and Archer collections.

There is a juvenile female labeled Oriente, Cuba (P. Alayo), in the collection of the University of Oriente. Unfortunately the females from Banes are at least one molt short of maturity. Therefore they neither indicate the full size of the species nor exhibit the adult type of epigynum. The epigynum of the genus *Cyrtophora* has a rather simple external structure, as is often the case in araneine Argiopidae in which the males are very small. This feature, along with the modifications of the carapace in the females of certain species (*C. unicolor* Doleschall), the spinal armature of the legs of males, and the features of the male palpus, points towards the conclusion that this genus lies at the base of the tribe Poltyidi, most of the members of which are morphologically very modified. The present species is most nearly related to *C. sellata* Simon, a species recorded in another part of the Caribbean region, and from which it is clearly distinct. The Cuban record is the most northerly record of *Cyrtophora* in America. In addition to this, the male is one of the few recorded for the genus in the New World. It is to be noted incidentally that in Middle America there is an unrecognized species of *Cyrtophora* designated as *Aranea cyrtophoroides* F. O. P.-Cambridge (1902, *Biologia Centrali-Americana*, Araneidea, vol. 2, p. 518, figs. 4, 4a-d).

Of interest are the web and habitats of this new species of *Cyrtophora*. The webs were found to be located between the horizontal branches of the *aroma*, an acacia-like tree. The spirals were formed around a hub, the main web being horizontal, the spokes radiating out from the center, and the entire construction being similar to that of *Cyrtophora citricola* Forskal, as described by Hans Wiehle (1928, *Zeitschr. für Morphol. und Okol. der Tiere*, vol. 11, p. 126). However, the web is not dome-shaped in profile, being almost as flat as the horizontal web of *Leucauge* but with the hub pulled upward in the form of a low cone. At an outer border of the main web is a maze into which is woven a mass of dead leaves. In these leaves will be found one leaf that is used as a nest, and in which the female sits dorsum downward. In one web the male was found in the maze. In general the environmental niche of *C. alayoi* consists of a jungle of fairly low trees, mostly leguminous, acacia-like trees frequently occupied by

very large bromeliads. The terrain is made up of low, irregular, weakly dissected hills. The top soil is of the gray soil type characteristic of some jungle environments. At the time of the author's visit the area was dry and under the influence of steadily blowing trade winds.

***Bertrana farri*, new species**

Figures 18-21, 24

**MALE:** Carapace ivory yellow, with a dusky, inverted, triangular patch covering the posterior half of the cephalon, and the apex resting in the cervical pit; eyes with black bases. Sternum ivory colored, and with transverse olivaceous patches, two on each side as well as a patch on the caudad projection between the fourth coxae. First and second pairs of legs light yellow; a wide brown annulation occurring on the distal half of each femur; third and fourth legs very pale yellow and with the distal end of each major segment annulated. Abdomen with scattered hairs on points; its base dusky but speckled; behind this on the dorsum a triangular light yellow patch; folium present, especially pronounced behind the midline, brown and margined with a wavy black line on each side; the sides yellow. Venter a deeper yellow, with a pair of widely separated fat bodies located a short distance in front of the spinnerets. Carapace elongate-cordate; cephalon nearly complanate; cervical pit and grooves weakly impressed; median eyes nearly equal in size; anterior median eyes separated by a diameter, and with a pair of projecting hairs between. Posterior median eyes separated by a diameter; lateral eyes each on separate cones, and less than a diameter apart. Leg formula, 1243, rather long and slender in proportions, the first pair the most conspicuously longest of the four; spines on the first femur noticeably stout; stout spines on patella and tibia of first leg; the other legs possessing slender spines; femora with two ventral spines at the most, three prolateral spines, and one stout distal spine, patellae, especially the first one, with a prolateral spine, a retrolateral one, and a distal one; tibiae with three prolateral spines distally located beyond the mid point, especially stout on first leg, two dorsal spines and three retrolateral spines. Abdomen widely cordate-ovate. Palp as illustrated in figure 21.

Total length of the holotype about 2.6 mm. (abdomen detached); carapace, 1.2 mm. long, 1.0 mm. wide; abdomen, 1.7 mm. long, 1.3 mm. wide.

**FEMALE:** Coloration much like that of the male, but the legs with a deep yellow cast. Dorsum of abdomen possessing a brown folium which at the widest point, located anteriorly, is bordered by outwardly

curving, black lines, each ending in a dark patch on the first pair of muscle scars, not directly connected with the double curved lines forming the border behind, and also ending in the second pair of muscle scars; from here on back three successive pairs of curved lines invading the folium, located transversely, and each in the shape of a parenthesis. Carapace with a very shallow clypeus; cephalon convex, short, and wide, elevated behind the ocular zone; eyes as usual in *Bertrana*, the lateral eyes being slightly but distinctly separated; cervical grooves and radial furrows weakly impressed. Chelicerae provided with three very stout teeth; a row of four long prolateral hairs located on it. Leg formula, 1243, third leg very short; third and fourth femora each with a row of slender ventral spines; all major segments of the legs with some scattered spines and numerous setae. Abdomen moderately pubescent. Epigynum as shown in figure 18.

Total length of female allotype, 4.6 mm.; carapace, 1.9 mm. long, 1.8 mm. wide; abdomen, 2.1 mm. long, 1.8 mm. wide.

	I	II	III	IV
Femur	1.9 mm.	1.8 mm.	0.7 mm.	0.9 mm.
Patella	0.5	0.4	0.2	0.3
Tibia	1.3	1.1	0.4	0.7
Metatarsus	1.2	1.1	0.4	0.6
Tarsus	0.6	0.5	0.3	0.4
Total	5.5 mm.	4.8 mm.	2.0 mm.	2.4 mm.

TYPE LOCALITY: Male holotype, female allotype, immature male and female paratypes, Hardwar Gap, 4800 feet, Jamaica, July 28, 1955 (T. H. Farr and A. F. Archer), in the American Museum of Natural History collection and the Archer collection.

This record is outstanding not only because of the newly described species but also for two other reasons. This is the first time that *Bertrana* has been taken in the Antilles, which automatically extends its northward range beyond the eighteenth parallel. Finally, the male is the second one known for this genus, the other having been described from Panama for *B. hieroglyphica* Petrunkevitch (1925, Trans. Connecticut Acad. Arts Sci., vol. 27, pp. 113-115, figs. 23-28). Most of the Jamaican material was taken by sweeping from vertical webs at the bases of tree ferns.

*Alcimosphenus bifurcatus* Petrunkevitch

Figures 29, 30

*Alcimosphenus bifurcatus* PETRUNKEVITCH, 1910, Ann. New York Acad. Sci., vol. 19, p. 211, pl. 21, fig. 8; 1930, Trans. Connecticut Acad. Arts. Sci., vol. 30, p. 264, figs. 117-118.

Until the present time all material listed in the literature and pertaining to this species has been immature. In company with Mr. T. H. Farr of the Science Museum, Institute of Jamaica, the author took a number of adult females at Hardwar Gap, Portland Parish, Jamaica, July 28, 1955, at elevations of about 4400 feet. Mr. Farr and C. B. Lewis, the Science Museum Director, both stated that this "crimson spider" had been taken here on previous occasions. Noted but not taken were immatures living in characteristic situations on slopes about the Rafting Place, Rio Grande River, Portland Parish, Jamaica, July 29, 1955. The fully grown female has a total length ranging between 8.0 and 9.0 mm. and thus approximates the stature of the females of *A. licinus* Simon. The web is slanting, somewhat deviating from the horizontal plane, and is located on embankments at or near the bases of ledges, being fastened and secured to ground plants. At lower elevations than those given above the habitat proves to be somewhat artificial and weedy. At Hardwar Gap webs were located near the trail side in a tree fern forest, rich in orchids and bromeliads, and with some dicot angiosperm trees and vines included. The spider, very conspicuously crimson, with black markings, is rather shy and will dive to the ground for concealment if disturbed.

*Alcimosphenus licinus* Simon

Figures 27, 28

*Alcimosphenus licinus* SIMON, 1895, Histoire naturelle des araignées, ser. 4, vol. 1, p. 931. BRYANT, 1940, Bull. Mus. Comp. Zoöl., vol. 86, no. 7, p. 357.

This brilliantly crimson spider, much like the previous species in appearance, was taken by the author in Cuba in 1930 and again in 1955. This species has turned up very consistently in Pinar del Rio and Oriente, two provinces at the opposite ends of the island. Recent collecting post-dating Bryant's report on Cuban spiders has been done by M. L. Jaume of Havana and by Pastor Alayo of the University of Oriente. The latter turned up a good series in December, 1955. This species inhabits both the rain forest and culture areas of man.

LOCALITIES: *Cuba*: Viñales, Pinar del Rio, January, 1955 (M. L. Jaume), female; Baños de San Vicente, Pinar del Rio, July, 1930 (A. F. Archer), female. *Isle of Pines*: Sierra las Casas, August 16-18, 1955 (A. F. Archer), immature females. *Cuba*: Cuabitas, Santiago, Oriente, December 10-18, 1955 (P. Alayo), females, immatures. Specimens are in the collections of the American Museum of Natural History, Museum of Comparative Zoölogy, Ramsden Museum of the University of Oriente, and the Archer collection.

*Alcimosphenus rubripleurus* Mello-Leitão

Figures 22, 23, 25

*Alcimosphenus rubripleurus* MELLO-LEITÃO, 1947, Arq. Mus. Paranaense, vol. 6, pt. 6, pp. 239-240, figs. 6, 7.

The genus *Alcimosphenus* was analyzed in one of the author's papers on orbweaving spiders (1951, Amer. Mus. Novitates, no. 1487, p. 12). The occurrence of a species in continental South America completes the distributional picture of the genus and more effectively relates its distribution with that of the related genus *Arachnura* found in the Pacific region from Japan to New Zealand in the southeast. The male located in the collection of the American Museum on which the analysis of *Alcimosphenus* is based is the only one available from the entire genus for examination. The scarcity of South American specimens in collections is no doubt due to defects in collecting. According to the original description of *rubripleurus* the adult female measures 6.0 mm., or about 2.0 mm. shorter than that of *A. licinus*, a species which it resembles superficially.

*Heurodes porcula* Simon

Figure 35

*Epeira porcula* SIMON, 1877, Ann. Soc. Ent. France, ser. 5, vol. 7, p. 78.

The genus *Heurodes* Keyserling (L. Koch, 1887, Die Arachniden Australiens, vol. 2, p. 116, genotype: *H. turrita* Keyserling) supersedes the genus *Simonarachne* Archer (1951, Amer. Mus. Novitates, no. 1502, p. 28), and the description contained in the latter reference pertains to *Heurodes*. In addition, it is almost certain that *Eriovixia* Archer (1951, Amer. Mus. Novitates, no. 1487, p. 18) from Africa is also *Heurodes* and should be regarded only as a subgenus of it.

*Wixia pujalsi*, new species

Figure 31, 32

FEMALE: Carapace orange. Sternum deep yellow. Legs ivory yellow, with dark brown annulations, three each on tibiae and metatarsi 1 and 2. Abdomen dirty white, with a faded folium made up of transverse bars forming a sort of ladder; apodemes, with the usual four pairs of muscle scars, dusky. Venter white except for a central black patch located near the spinnerets; a pair of white dots on this patch. Cephalon, as usual in *Wixia*, elevated and having the cervical grooves not converging at the cervical pit; lateral eyes separated. Abdomen elevated, widely subovate, with, however, only a faint suggestion of a

pair of shoulder humps. Leg formula, 1243, first and second femora with a row of ventral spines; third femur smooth on its ventral face; fourth femur having on its basal half an incomplete ventral row of hair-like spines, each on a raised point. Epigynum as shown in figures 31 and 32; scape rebordered, depressed, and of a form characteristic of *Wixia*.

Total length of female holotype, 7.4 mm.; carapace, 2.0 mm. long, 1.8 mm. wide; abdomen, 5.3 mm. long, 3.8 mm. wide; first femur, 3.3 mm.; patella, 1.0 mm.; tibia, 2.3 mm.; metatarsus, 2.0 mm.; tarsus, 0.7 mm.

**TYPE LOCALITY:** Female holotype from Chirivico, Oriente, Cuba, July 2-4, 1955 (A. F. Archer).

This is one of the few members of *Wixia* that lack the characteristic elevated hump on the abdomen. In fact this peculiarity is enough to render *W. pujalsi* difficult to identify with *Wixia* in the field. The spider was discovered at dusk descending from the dense branches of a ceiba tree near a guest house (coastal region).

This species is dedicated to Dr. Ernesto Pujals, secretary of the University of Oriente, who aided materially in the work accomplished in southeastern Cuba.

### *Metepeira acostai*, new species

#### Figure 36

**FEMALE:** Coloration exactly as in other Antillean species of *Metepeira*, including the sympatric species, *M. triangularis* Franganillo. Proportions and details of the external anatomy as usual in *Metepeira*. Epigynum as shown in figure 36.

Total length of female holotype, 6.1 mm.; carapace, 2.9 mm. long, 2.5 mm. wide; abdomen, 3.7 mm. long, 3.5 mm. wide.

**TYPE LOCALITY:** Female holotype from the savannas, Agramonte, Camaguey Province, Cuba, August 6, 1955 (A. F. Archer).

This species is dedicated to Dr. J. T. Acosta of Havana, Cuba, an intrepid field naturalist and teacher of science, who collected many spiders in Camaguey Province. This spider was found on a wire fence bordering a pasture in company with *Metepeira triangularis* Franganillo and *Cyclosa oculata* (Walckenaer). *Metepeira triangularis* is the species listed by Bryant (1940, Bull. Mus. Comp. Zoöl., vol. 44, no. 7, p. 341) as *labyrinthea* Hentz. However, it proves to be very distinct in the matter of the epigynum and, moreover, is a species found throughout Cuba and the Isle of Pines.

***Metepeira jamaicensis*, new species**

## Figure 33

**FEMALE:** Coloration as generally found in *Metepeira*. Carapace brown. Sternum brown with a central, light yellow patch. Legs ivory yellow, annulate. Abdomen with a folium of the usual type, dirty white with a white border. External anatomy and proportions typical of *Metepeira*. Epigynum as illustrated in figure 33.

Total length of female holotype, 6.0 mm.; carapace, 2.7 mm. long, 1.6 mm. wide; abdomen, 3.0 mm. long, 2.8 mm. wide; first femur, 2.6 mm.; patella, 0.9 mm.; tibia, 2.0 mm.; metatarsus, 2.1 mm.; tarsus, 0.8 mm.

**TYPE LOCALITY:** Female holotype and female paratype from Healthshire Hills, Port Henderson, St. Catherine Parish, Jamaica, July 26, 1955 (T. H. Farr and A. F. Archer), in the collection of the American Museum of Natural History and in the Archer collection.

**OTHER LOCALITIES:** *Jamaica:* Between Boston and Blue Hole, Portland Parish, July 29, 1955 (A. F. Archer), female paratype, egg sacs, and nest; Hope Gardens, Gordontown, St. Andrew's Parish, July 27, 1955 (A. F. Archer), female paratypes; in the Archer collection.

It may well be that this will prove to be the prevalent species of *Metepeira* in Jamaica. Its habits and habitats are rather typical of the genus. It was found in rather dry terrain, the subxeric habitat at Healthshire Hills being especially notable.

**CATHAISTELA, NEW GENUS**

Median apophysis of the male palpus transverse, long, low, naviculate; endal spur subacute; ectal end a raised, emarginate rim or point; base well defined, narrow to moderately wide. Radix elevated, irregular, wide at the base. Embolus curved, prone, stout, at least at the base. Conductor a strongly developed, upwardly curved rim. Cymbium spinose, and of a very regular shape. Paracymbium an upwardly curving, stout, blunt hook. A cone on the base of the palpal femur. First coxa with a heavy ventral spur; second coxa with or without a ventral cone. Second tibia incrassate or subequal to the first, and in some species with a stout ventral spur on the apex in addition to the regular spinal armature. First and second legs of male in some species tending to be markedly longer than the third and fourth legs, a condition also present in some females as well, thus giving the spider a laterigrade appearance. Scape of epigynum varying from rather long and flexible to short and completely cornified; atriolar region consist-



ing of stout, solid rings, with openings apparently anterior to their margins. Abdomen of female various, being subtriangular or somewhat elongated, as in the subgenus *Evetria* of *Cyrtophora*, with or without a cone on each shoulder; surface of dorsum bristly, hirsute; muscle scars consisting of very pronounced chitinous rings. Legs of female heavily spinose; a row of ventral femoral spines on one or more legs. Carapace of female lacking tufts of hairs; cervical grooves more or less broad and shallow, and unlike those of *Aranea*, not convergent with the cervical pit; the latter transverse as in *Neoscona*, wide and shallow; cephalon more or less convex. Lateral eyes of both sexes separate, and in the case of the female located on lateral protuberances.

GENOTYPE: *Cathaistela ventricosa* (L. Koch).

In a former paper (Archer, 1951, Nat. Hist. Misc., no. 84, p. 2, fig. 2) members of this genus were referred to *Chinestela* Chamberlin, 1924, but on close examination of Oriental material it is very evident that Chamberlin's name applies to a subgeneric complex of *Neoscona*, evidently typical of the Oriental region. The sexual anatomy of *Cathaistela* is unlike that of *Neoscona* in any of its forms. Chamberlin's figure of *Chinestela* did not show structures of the palpus at a satisfactory angle, and consequently several interpretations are possible. However, his description fits *Neoscona* closely, but leaves much unsaid. It is to the credit of Takeo Yaginuma of Osaka, Japan, that species of *Neoscona*, originally assigned to *Aranea*, have been presented in conclusive detail (1955, Acta Arachnol., vol. 14, no. 1, pp. 15, 24, pls. 1, 2). Although *Cathaistela* is an Old World genus, it is of importance here from the standpoint of comparative morphology because of its broad similarity to both *Neoscona* and *Eriophora*, genera occurring in both hemispheres. To it can be assigned *Cathaistela umbratica* (Clerck) as well as a number of Oriental species.

#### *Atea lewisi*, new species

Figures 39, 40

FEMALE: Carapace brown, with a triangular dark brown patch extending from behind the ocular region to beyond the halfway point of the cephalon; a longitudinal dark line from the cervical pit forward, between the posterior median eyes and as far as the anterior median eyes. Sternum dark yellow and with a dusky border. Legs yellow, with dusky annulations on each principal joint; first leg with a prolateral green wash on its entire length. Abdomen dark, reticulated on the base except for the interruption by a light, longitudinal

stripe having a wavy border, and extending backward, only to expand widely between the shoulder humps; a light green wash over the entire stripe, with occasional black dots and dark patches interrupting the continuity of the pattern; shoulder humps green, each one with a black tip; folium dusky, interrupted behind by a central light patch, having on each side transverse recurved bands, and margined with green and black dots; sides of abdomen green over white. Venter pale except for a black patch lying between epigynum and spinnerets, and with a pair of white spots. Carapace of the form usual in *Atea*, pubescent, and with a very few scattered bristles on the cephalon; cervical grooves converging towards a narrow cervical pit, but not meeting it. Legs pubescent; second leg spinose in two dorsal rows; other legs with one to two spines on the prolateral angles. Abdomen with scattered pubescence, becoming a little denser on the sides; widely subtriangular, and with blunt, stout humeral angles. Epigynum as illustrated in figure 39.

Total length of female holotype, 4.2 mm.; carapace, 2.0 mm. long, 1.7 mm. wide; abdomen 2.8 mm. long, 1.9 mm. wide; first femur, 1.8 mm.; patella, 0.7 mm.; tibia, 1.3 mm.; metatarsus, 1.0 mm.; tarsus, 0.6 mm.

TYPE LOCALITY: Female holotype from Hardwar Gap, 4600 feet elevation, Portland Parish, Jamaica, July 28, 1955 (A. F. Archer).

This is the first recorded occurrence in the Antilles of the recently redefined genus *Atea* Archer (1951, Nat. Hist. Misc., no. 84, p. 3). This genus, described by C. Koch, was sunk by Simon and lost in the synonymy, with the resulting creation of a synonym, *Conaranea* Archer (1941, Amer. Mus. Novitates, no. 1502, p. 5).

This very distinct species was taken in the sweeping net from the tree fern forest. It is dedicated to Dr. C. Bernard Lewis, Director of the Science Museum, Institute of Jamaica, Kingston, Jamaica, who contributed materially to the success of the field work and studies carried out in Jamaica.

### *Singa bengryi*, new species

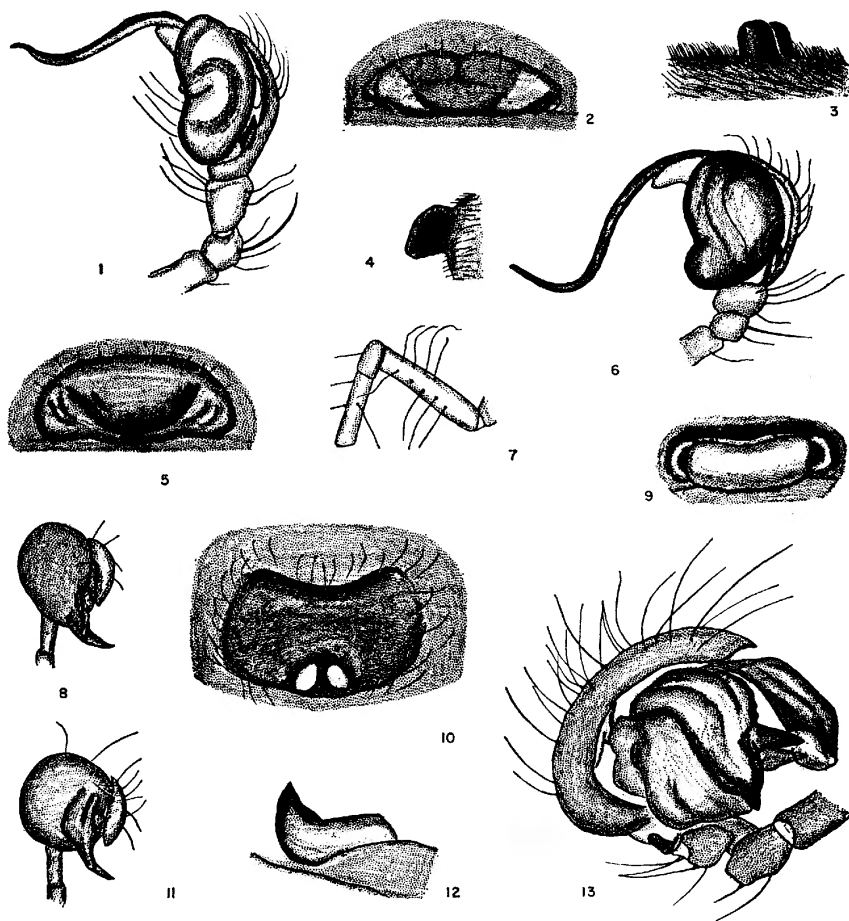
Figure 38

FEMALE: Color and general appearance exactly as found in the average species of *Singa*. External anatomy and structure as usual in *Singa*. Epigynum as illustrated in figure 38.

Total length of female holotype, 4.6 mm.; carapace, 1.9 mm. long, 1.0 mm. wide; abdomen, 2.7 mm. long, 2.3 mm. wide.

TYPE LOCALITY: Female holotype from Long Mountain, St. Andrew's Parish, Jamaica, July 25, 1955 (A. F. Archer).

Taken in the net in company with *Metazygia albonigra* Franganillo, from which it is rather difficult to distinguish in the field.



- FIGS. 1, 2. *Nephila clavipes fasciculata* (De Geer). 1. Palpus. 2. Epigynum.  
 FIGS. 3-6. *Nephila cornuta* Pallas. 3. Cephalic horns. 4. Ocular protuberance. 5. Epigynum. 6. Palpus.  
 FIG. 7. *Mecynometa torrei*, new species, third leg of male holotype.  
 FIG. 8. *Mecynometa montivaga*, new species, ectal view of palpus.  
 FIG. 9. *Nicolasia tigrina* (Simon), epigynum.  
 FIG. 10. *Metargyra fuscolimbata*, new species, epigynum.  
 FIG. 11. *Mecynometa torrei*, new species, ectal view of palpus.  
 FIGS. 12, 13. *Allepeira martiana*, new species. 12. Median apophysis of palpus. 13. Right palpus, ventral view.



FIGS. 14-16. *Cyrtophora alayoi*, new species. 14. Female allotype, dorsal view. 15. Median apophysis, ectal view. 16. Left palpus, endal view.

FIG. 17. *Ogulnius cubanus*, new species, epigynum.

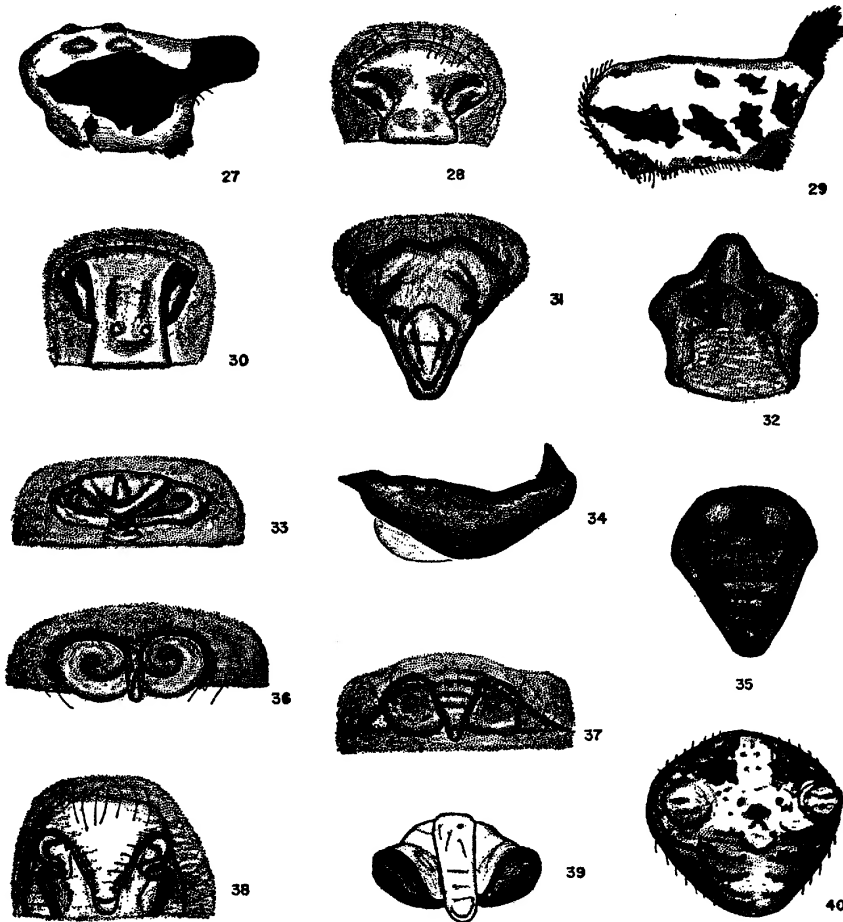
FIGS. 18-21. *Bertrana farri*, new species. 18. Epigynum. 19. Abdomen of female allotype. 20. First coxa of male holotype. 21. Left palpus, endal view.

FIGS. 22, 23. *Alcimosphenus rubripleurus* Mello-Leitão. 22. Left palpus, ventral view. 23. First coxa of male.

FIG. 24. *Bertrana farri*, new species, median apophysis of palpus.

FIG. 25. *Alcimosphenus rubripleurus* Mello-Leitão, median apophysis.

FIG. 26. *Allepeira martiana*, new species, epigynum.



FIGS. 27, 28. *Alcimosphenus licinus* Simon. 27. Abdomen of female. 28. Epigynum.

FIGS. 29, 30. *Alcimosphenus bifurcatus* Petrunkevitch. 29. Abdomen of female. 30. Epigynum.

FIGS. 31, 32. *Wixia pujalsi*, new species. 31. Ventral view of epigynum. 32. Caudal view of epigynum.

FIG. 33. *Metepeira jamaicensis*, new species, epigynum.

FIG. 34. *Cathaistela ventricosa* (L. Koch), median apophysis of palpus.

FIG. 35. *Heurodes porcula* Simon, epigynum.

FIG. 36. *Metepeira acostai*, new species, epigynum.

FIG. 37. *Metepeira triangularis* Franganillo, epigynum.

FIG. 38. *Singa bengryi*, new species, epigynum.

FIGS. 39, 40. *Atea lewisi*, new species. 39. Epigynum. 40. Abdomen of female holotype.

